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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/623,373 | 08/30/2000 | Bjorn Heed | | 2764 |

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| EXAMINER | |
|---|---|
| BOYER, RANDY | |
| **ART UNIT** | **PAPER NUMBER** |
| 1764 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 03/07/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/623,373 | HEED, BJORN | |
| | Examiner | Art Unit | |
| | Randy Boyer | 1764 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-4,6,7 and 9-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,7 and 9-17* is/are rejected.

7)☒ Claim(s) *17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. Examiner acknowledges response filed 7 September 2006 containing amendments to the claims, specification, drawing, and remarks.

2. Examiner acknowledges that the amendments to the drawings as amended and filed 18 October 2006 overcome objections under 37 C.F.R. § 1.83(a), and 37 C.F.R. § 1.84(p)(4).

3. Examiner acknowledges that the amendments to the claims, specification, and drawings overcome the previous rejection based on 35 U.S.C. 112.

4. The previous rejections of claims 1-4, 6, 7, and 9-17 under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) are withdrawn for the reasons set out below.

5. Amended claim 17 is objected to and a new grounds for rejection of claims 1-4, 6, 7, and 9-17 under 35 U.S.C. 102(b) is entered for the reasons set out below.

### *Response to Arguments*

6. With respect to the previous rejection made under 35 U.S.C. 102(b) as being anticipated by Bayer, Examiner understands Applicant's arguments to be:

I. Bayer fails to disclose or suggest an equipment for purification of gases, comprising, *inter alia*, "said matrix adapted to heat the gas in a regenerative high temperature process to oxidation or self-decomposition temperature and a catalytic process," as recited in claim1.

II. Bayer fails to disclose or suggest, "said intermediate matrix zone has a

temperature reducing effect on said gases prior to entering the catalytic zone," as recited in claim 1.

7. With respect to Applicant's first argument, Bayer discloses a matrix (40) adapted to heat the gas in a regenerative high temperature process to oxidation temperature (see Bayer, column 3, lines 64-68, and column 4, lines 1-9 and 14-19) and a catalytic process (see Bayer, column 3, lines 14-19).

8. With respect to Applicant's second argument, Applicant now acknowledges and understands that Bayer does not disclose or suggest the intermediate matrix zone having a temperature reducing effect on the gases prior to entering the catalytic zone. Examiner adopts the same view as Applicant on this point and for this reason withdraws the previous rejection made under 102(b).

9. With respect to the previous rejection made under 35 U.S.C. 103(a) as being unpatentable over Bayer in view of Gribbon, Applicant reasserts the arguments made in response to the rejection made under 35 U.S.C. 102(b) as given in paragraph 6, *supra*. In addition, Applicant argues that Gribbon fails to explicitly teach or suggest "an intermediate zone." Applicant asserts that Gribbon discloses that the combustion chamber (26), having a high temperature, "immediately reacts" with the catalyst (22 and 24).

10. Examiner agrees that Gribbon does not explicitly disclose an intermediate matrix zone. However, Gribbon's Figure 2 provides a catalytic zone (aligned horizontally and corresponding to elements 22 and 24 in Figure 1), and a combustion zone (corresponding to element 28 in Figure 1). The catalytic zone and combustion zone as shown by Gribbon in Figure 2 are necessarily separated by some distance (an

"intermediate zone"). Because Gribbon does not provide a means for maintaining a constant temperature between the combustion zone and catalytic zone (i.e. in the intermediate zone), the intermediate zone will necessarily have a temperature-reducing effect on the gases prior to entering the catalytic zone. Thus, Gribbon provides inherent disclosure for an intermediate matrix zone separating the catalytic zone and combustion zone, wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone.

In addition, Examiner finds no indication in Gribbon's disclosure to support Applicant's assertion that Gribbon discloses an "immediate reaction" occurring in the combustion chamber, nor any other indication as to the rate of reaction.

11. However, since the Bayer reference supporting the previous rejection made under 35 U.S.C. 102(b) has been distinguished, Examiner likewise withdraws the previous rejection made under 35 U.S.C. 103(a) on the basis of Gribbon in view of Bayer.

***Claim Objections***

12. Claim 17 is objected to for the following reasons.

13. Claim 17 as presently amended reads, in relevant part, "wherein said intermediate matrix zone has a temperature reducing effect on said gases prior to entering the catalytic zone and each catalytic zone has a temperature oxidation or self-decomposition temperature."

14. Examiner takes the position that Applicant in fact intended claim 17 to read, "wherein said intermediate matrix zone has a temperature reducing effect on said gases prior to entering the catalytic zone and each catalytic zone has a temperature ***below the*** oxidation or self-decomposition temperature" (emphasis added). Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-4, 6, 7, and 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Gribbon (US 5,589,142).

17. With respect to claim 1, Gribbon discloses equipment for purification of gases comprising at least one heat exchanging matrix (10), the matrix adapted to heat the gas in a regenerative process to oxidation or self-decomposition temperature and a catalytic process, the at least one heat exchanging matrix includes three zones, one zone is a catalytic zone having a temperature below the oxidation or self-decomposition temperature that is catalytically active in promoting reduction of nitrogen (22, 24, and column 5, lines 41-46), one zone is a combustion zone having a temperature of at least the oxidation or self-decomposition temperature (26), and one zone is an intermediate matrix zone (see Gribbon, Figure 2), the catalytic zone is separated from the

combustion zone by the intermediate matrix zone counted in the direction of flow, wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone.

Examiner notes that Gribbon does not explicitly disclose an intermediate matrix zone.

However, Gribbon's Figure 2 provides a catalytic zone (aligned horizontally and corresponding to elements 22 and 24 in Figure 1), and a combustion zone (corresponding to element 28 in Figure 1). The catalytic zone and combustion zone as shown by Gribbon in Figure 2 are necessarily separated by some distance (an intermediate zone). Because Gribbon does not provide a means for maintaining a constant temperature between the combustion zone and catalytic zone (i.e. in the intermediate zone), the intermediate zone will necessarily have a temperature-reducing effect on the gases prior to entering the catalytic zone.

Thus, Gribbon provides inherent disclosure for an intermediate matrix zone separating the catalytic zone and combustion zone, wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone.

18. With respect to claim 2, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), the matrix adapted to heat the gas in a regenerative process to oxidation or self-decomposition temperature and a catalytic process, the heat exchanging matrix includes two catalytic zones (22, 24) that are catalytically active and situated on each side of a center combustion zone of the matrix and two intermediate zones (see Gribbon, Figure 2; each intermediate zone being at

either side of the combustion chamber burner and providing a separation distance between the combustion chamber burner and catalytic zones), each catalytic zone is separated from the center combustion zone by one of the intermediate matrix zones counted in the direction of flow, wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone and each zone has a temperature below the oxidation or self-decomposition temperature.

19. With respect to claim 3, Gribbon discloses equipment for the purification of gases comprising at least one heat exchanging matrix (10), and further comprising a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix.

20. With respect to claim 4, Gribbon discloses equipment for the purification of gases comprising at least one heat exchanging matrix (10), and further comprising a supply interrupt mechanism arranged and constructed to interrupt a supply of reducing agent for a short period in connection with a change of direction of gas flow through the equipment (see Gribbon, column 4, lines 4-23).

21. With respect to claim 6, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), and further comprising a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix.

22. With respect to claim 7, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix, and further comprising a supply interrupt mechanism arranged and constructed to interrupt a supply of reducing agent

for a short period in connection with a change of direction of gas flow through the equipment (see Gribbon, column 4, lines 4-23).

23. With respect to claim 9, Gribbon discloses equipment for the purification of gases comprising at least one heat exchanging matrix (10), a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix, and wherein the zones are arranged such that a gas flowing through the equipment encounters the catalytic zone before the combustion zone (see Gribbon, column 3, lines 48-67, and column 4, lines 1-30).

24. With respect to claim 10, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), and further comprising a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix, wherein the zones are arranged such that the gas flowing through the equipment encounters the catalytic zone before the combustion zone (see Gribbon, column 3, lines 48-67, and column 4, lines 1-30).

25. With respect to claim 11, Gribbon discloses equipment for purification of gases comprising at least one heat exchanging matrix (10), wherein the matrix is arranged such that the gas can flow in a first direction in which the gas encounters the catalytic zone before combustion zone and such that the gas can flow in a second direction in which the gas encounters the combustion zone before it encounters the catalytic zone (see Gribbon, column 4, lines 54-63).

26. With respect to claim 12, Gribbon discloses equipment for purification of gases comprising at least one heat exchanging matrix (10), wherein the matrix is arranged

such that the gas can flow in a first direction in which the gas encounters the catalytic zone before combustion zone and such that the gas can flow in a second direction in which the gas encounters the combustion zone before it encounters the catalytic zone (see Gribbon, column 4, lines 54-63), and wherein the equipment is adapted such that the gas flows only one direction at a time (see Gribbon, column 3, line 48 through column 5, line 20).

27. With respect to claim 13, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), further comprising a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix.

28. With respect to claim 14, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix, and further comprising a supply interrupt mechanism arranged and constructed to interrupt a supply of reducing agent for a short period in connection with a change in direction of gas flow through the equipment (see Gribbon, column 4, lines 4-23).

29. With respect to claim 15, Gribbon discloses equipment for purification of gases comprising at least one heat exchanging matrix (10), wherein the matrix is arranged such that the gas can flow in a first direction in which the gas encounters the catalytic zone before combustion zone and such that the gas can flow in a second direction in which the gas encounters the combustion zone before it encounters the catalytic zone (see Gribbon, column 4, lines 54-63), and further comprising a duct (54) for providing a supply of a reducing agent wherein the matrix is arranged such that the gas flows only

one direction at a time (see Gribbon, column 3, line 48 through column 5, line 20) and the duct is adapted to maintain a supply of reducing agent only when the gas flows in the first direction (see Gribbon, column 3, line 48 through column 5, line 20).

30. With respect to claim 16, Gribbon discloses equipment for purification of gases comprising at least one heat exchanging matrix (10), the matrix adapted to heat the gas in a regenerative process to oxidation or self-decomposition temperature and a catalytic process, the at least one heat-exchanging matrix including at least three zones, at least one zone is a catalytic zone having a temperature below the oxidation or self-decomposition temperature that is catalytically active in promoting reduction of nitrogen oxides (22, 24), and at least one zone is a combustion zone (26), having a temperature of at least the oxidation or self-decomposition temperature, each catalytic zone being separated from each combustion zone by an intermediate matrix zone (see Gribbon, Figure 2; each intermediate zone being at either side of the combustion chamber burner and providing a separation distance between the combustion chamber burner and catalytic zones), counted in the direction of flow wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone.

31. With respect to claim 17, Gribbon discloses equipment for purification of gases comprising a single heat exchanging matrix (10), the matrix adapted to heat the gas in a regenerative process to oxidation or self-decomposition temperature, the heat exchanging matrix including two catalytic zones (22, 24) that are catalytically active and situated on each side of a center combustion zone of the matrix and at least one intermediate matrix zones (see Gribbon, Figure 2; each intermediate zone being at

either side of the combustion chamber burner and providing a separation distance between the combustion chamber burner and catalytic zones), each catalytic zone is separated from the center combustion zone by the at least one intermediate zones counted in the direction of flow, wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone and each catalytic zone has a temperature below the oxidation or self-decomposition temperature.

***Conclusion***

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB

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